## **Effect of comorbid pulmonary disease on severity of COVID-19:** A systematic review & meta-analysis

dies				Severe COVID-19	Non-severe COVID-19			W
	OR		dence interval)	Ev/Total	Ev/Total			
zeedi S, [19]		(0.320,	5.903)	2/42	37/1054			
ziano MG, [20]		(0.470,	1.588)	14/236	52/764			
SC, [21]		(0.287,	2.423)	5/62	14/147		-	
er FS, [23]		(0.545,	7.250)	7/51	4/54			
ozzolo S, [26]		(1.227,	6.239)	8/41	65/807			
Q, [13]		(0.009,	3.097)	0/43	6/102			
, [24]		(1.132,	5.065)	13/91	19/292		_	
X, [30]		(0.209,	5.273)	2/20	9/94	-	-	
Y [31]		(2.237,	13.391)	14/124	8/352			_
[32]			332.605)	3/15	0/28			· ·
Rossi P, [33]		(0.836,	2.163)	24/217	91/1075			
P, [34]	1.094	(0.426,	2.813)	7/130	13/263			
WJ, [36]	5.509	(1.756,	17.286)	6/173	6/926			_
S, [37]		(1.429,	2.666)	87/784	86/1431			
R, [38]	3.773	(1.160,	12.270)	6/50	6/172			_
[40]	6.508	(2.562,	16.529)	22/133	6/203		-	
[41]	11.829	(0.661,	211.746)	6/172	0/151			•
C, [42]	6.840	(0.260,	179.780)	1/13	0/28			
sen SB, [43]	1.236	(0.252,	6.060)	2/27	9/148		· · ·	
an M, [44]	3.776	(1.048,	13.606)	5/19	7/81			_
, [45]	7.615	(1.156,	50.180)	3/16	2/68			
[46]	6.600	(0.382,	114.155)	1/11	1/67			
47]	3.491	(1.124,	10.846)	13/269	4/279			-
[48]	12.000	(1.074,	134.110)	4/9	1/16			
[49]	7.785	(0.412,	147.130)	4/85	0/70			
Bracamonte GM [50]	4.032	(3.808,	4.269)	1839/38310	3619/292988		-	
pe I. [51]	2.361	(1.391,	4.007)	28/310	31/768			
Ip G. [53]	1.129	(0.456,	2.800)	7/52	23/190			
[54]	0.933	(0.214,	4.078)	2/62	21/609	-		
IS S. [55]	2.875	(0.725,	11.395)	4/20	6/75			
6, [56]			448.348)	4/40	0/95			
D, [57]		(0.923,	91.310)	3/36	1/102		_	
L, [58]		(2.175,	13.294)	11/65	10/274			
Z, [59]		(0.564,	34.573)	2/14	2/55			
[60]			178.120)	1/83	0/197			
, [61]		(0.079,	24.489)	0/40	8/964			
P, [62]			173.211)	4/68	0/65			
r, [02]   JJ, [64]			154.960)	2/58	0/82			
G, [65]		(1.144,	36.140)	4/55	2/166			
J, [66]		(0.230.	31.193)	1/18	2/93	-		
R, [67]		(0.230,	99.007)	3/30	1/90			
		(0.430,	1.852)	11/195	25/398			
Z, [68]								
F, [69]		(0.396,	12.999)	2/30	4/131			
F, [70]	5.400	(0.959,	30.402)	4/54	2/137			
verall (random effect): verall (fixed effect):	2.580	(1.992, (3.421,	3.342) 3.811)	2191/42373	4203/306151	favours [non-severe]	$\Diamond$	favours [severe]

## **Summary Points**

Comorbid COPD and chronic respiratory diseases (CRD) were clearly associated with higher severity of COVID-19; however, no association between asthma and severe COVID-19 was identified.

\*

Questions remain regarding the relationships between COVID-19 and the severity of COPD and asthma, as well as the relationship of COVID-19 with other pulmonary conditions, including interstitial lung diseases, bronchiectasis, and cystic fibrosis. \*

The potential impact of greater age of patients with COPD compared to the average patients with asthma should be an important component for future analysis.

## Prevalance of CRD in patients with severe vs. non-severe COVID-19

Studies	OR	(95% confi	idence interval)	Severe COVID-19 Ev/Total	Non-severe COVID-19 Ev/Total			,
Argenziano MG, [20]	1.078	(0.762,	1.525)	55/236	168/764			1
Berenguer J, [22]	2.345	(1.982,	2.773)	310/1116	405/2874			1
Cao J, [25]	4.051	(1.005,	16.339)	4/17	6/85		· · · ·	
CDC report, [27]	2.848	(2.232,	3.636)	94/457	515/6180			1
Deng Y, [28]	9.525	(2.761,	32.857)	22/109	3/116			
ECDC, Week43 [29]	1.746	(1.670,	1.826)	2649/39609	9350/237188			1
Gupta S, [37]	1.102	(0.900,	1.350)	197/784	334/1431			1
Harrison SL, [39]	2.112	(1.869,	2.387)	391/1296	5122/30165			1
Hu L, [41]	2.486	(1.067,	5.792)	21/172	8/151			
Qi D. [52]	3.367	(1.412,	8.029)	10/50	15/217			
Wan S, [56]	7.253	(0.289,	181.899)	1/40	0/95			•
Wu J, [60]	2.425	(0.479,	12.270)	3/83	3/197		· ·	
Yan X, [61]	7.351	(3.844,	14.056)	21/40	126/964			-
Yang X, [63]	0.600	(0.078,	4.639)	2/32	2/20			
erall (random effect):		(1. 738,	2.643)	3780/44041	16057/280447		<b></b>	
erall (fixed effect):		(1.731,	1.871)			favours [non-severe]	4	favours [severe]
erogeneity: Q=93.1, df=13 (P < 0.001); P=86.0% t for overall effect: Z=7.12 (P < 0.001)						0.08 0.16 0.39	0.78 1.552.14 3.88 Odds Ratio (log	7.76 15.52 38.81 77.61 155.22

## Prevalence of asthma in patients with severe vs. non-severe COVID-19

tudies	OR	(95% confid	dence interval)	Severe COVID-19 Ev/Total	Non-severe COVID-19 Ev/Total			
Imazeedi S, [19]	4.581	(1.818,	11.546)	6/42	37/1054			• !
rgenziano MG, [20]	1.134	(0.723,	1.778)	29/236	84/764		-+	1
uld SC, [21]	0.655	(0.207,	2.076)	4/62	14/147			
erenguer J, [22]	0.760	(0.576,	1.005)	69/1116	230/2884			9
uckner FS, [23]	0.420	(0.102,	1.721)	3/51	7/54	-		1
CDC, Week42 [29]	1.772	(1.639,	1.915)	841/39609	2869/237188			1
ioyal P, [34]	1.086	(0.579,	2.039)	17/130	32/263			1
irein J, [35]	3.103	(0.335,	28.750)	5/34	1/19			1
upta S, [37]	0.648	(0.485,	0.866)	70/784	188/1431			
raelsen SB, [43]	2.735	(0.946,	7.903)	6/27	14/148			- !
X, [47]	1.562	(0.259,	9.422)	3/269	2/279			
arra-Bracamonte GM, [50]	0.718	(0.667,	0.774)	777/38310	8206/292988			
aranjpe I, [51]	0.929	(0.564,	1.530)	23/310	61/768			1
alacup G, [53]	0.089	(0.005,	1.499)	0/52	18/190	· · ·		1
omlins S. [55]	2.875	(0.725,	11.395)	4/20	6/75			
lang Z, [59]	0.738	(0.034,	16.239)	0/14	2/55			
hang JJ, [64]	1.410	(0.028,	72.095)	0/58	0/82			1
hao Z, [68]	1.334	(0.695,	2.561)	16/195	25/398			
verall (random effect): verall (fixed effect): terogeneity: Q=311.4, df=17 (P<0	1.013	(0.795, (0.964,	1.599) 1.065)	1873/81319	11796/538787	favours [non-severe]	$\diamond$	favours [severe]

Respirology

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